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CO-OP CHEMICALS

FOR *Insect Control* ON THE PRAIRIES



GRASSHOPPER



BLACK FLY



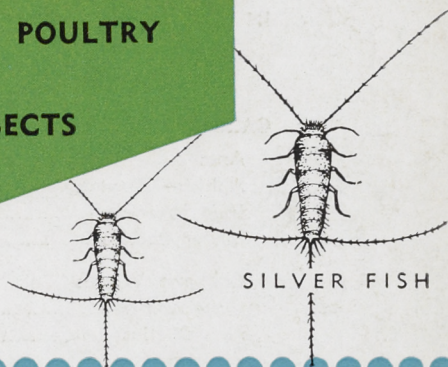
MOSQUITO



- FIELD CROP INSECTS
- GARDEN INSECTS
- SHELTER BELT, SHADE TREE AND ORCHARD INSECTS
- LIVESTOCK AND POULTRY INSECTS
- HOUSEHOLD INSECTS



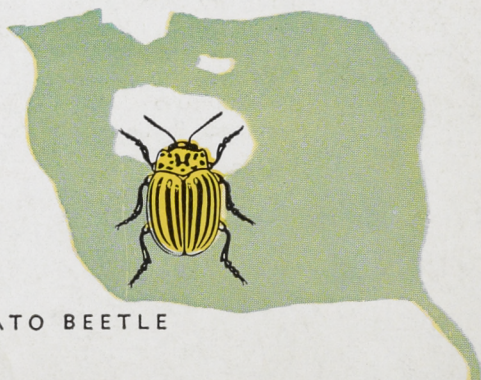
CUTWORM



SILVER FISH



BLISTER BEETLE



POTATO BEETLE

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INSECT CONTROL ON THE PRAIRIES

In the three prairie provinces losses from insect damage amount to millions of dollars annually. The greatest loss occurs in field crops. For example, in Saskatchewan the annual loss in the past ten years from wireworms, cutworms, grasshoppers and wheat stem sawfly has been estimated at between 6 and 14% of the total crop.

Every gardener is familiar with the aphids, cabbage worms, potato bugs and caterpillars which will damage his garden if left uncontrolled. Many different insects attack garden crops every year. Flies, gnats and mosquitoes attack livestock and if they are not controlled, often cause great losses.

Man himself is attacked by flies and mosquitoes and besides causing discomfort these insects are often carriers of diseases.

The loss from insects thus amounts to a great many dollars every year. By being able to recognize insects and by knowing something about their life history and the damage they do, controls can be effective. With the latest developments in the field of insecticides, control of insects has been simplified and become more efficient.

TYPES OF INSECTS

1. **Biting Insects**—They have biting mouth parts and feed by biting and chewing their food. They include such insects as caterpillars and beetles and feed by eating pieces of the plant tissue. They can be controlled by covering the part of the plants attacked with a poison. These poisons are called stomach poisons.
2. **Sucking Insects**—They have a sucking tube or beak and feed by inserting this into the plant tissue and sucking up the plant juices. A stomach poison cannot be used to control this type of insect as it inserts its beak through the poison into the plant tissue. For sucking insects, an insecticide which by coming in contact with the body of the insect poisons it, must be used. Sucking insects include such pests as aphids, thrips and leaf hoppers.

TERMS USED IN INSECT CONTROL

Insecticide—A chemical substance applied for control of insects.

Emulsion—A mixture of an oily liquid in water with the aid of soapy type substances to make the oil mix with the water.

Emulsion Concentrate—A liquid preparation which mixes with water to form a milky emulsion.

Wettable Powder—Powder which mixes readily with water for spray application but does not dissolve.

Oil Solution—Control materials dissolved in oil for use generally without further dilution.

Aerosol Bomb—A pressurized container which acts as its own sprayer.

Dust—A powder containing pesticide materials in dry state for application in a dust gun or other duster, generally without addition of other materials.

FIELD CROP INSECTS

Man has always been plagued by insects doing damage to his crops. At one time very little was known about control and the farmer could do nothing but hope and pray for a year free from the ravages of insects.

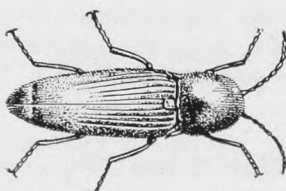
Gradually control measures were developed although at first they were primitive and inadequate. The grasshopper was one of the most spectacular crop destroyers, complete fields were wiped out. Finally poison baits were developed which at first were spread by hand and later by spreaders, many of them homemade. The baits were moderately efficient in control. However, with new chemicals and modern sprayers the grasshopper now finds the farmer's field a hazardous place to feed.

The wireworm was another tough competitor for the farmer's crop, often remaining in the soil for 10 to 11 years before reaching maturity. Control measures were difficult until the development of an insecticide made it possible for a farmer, by a simple seed treatment with that insecticide to grow a crop almost completely free of wireworm damage.

The development of insect resistant varieties such as sawfly resistant wheat was another important advance in insect control.

Through the combined efforts of agricultural research workers and industry new chemicals are continually being developed resulting in more efficient and widespread insect control.

WIREWORMS



Damage—Thin patchy stands indicate wireworm damage. The whole crop may be destroyed. The underground part of the stem is bored into and shredded but not cut off. Damage is usually most severe on summerfallow crop or rebroken grassland but stubble crop may be damaged. Wireworms attack all grain crops, especially wheat and spring rye.

Control—Follow culture practices recommended by agricultural authorities. Chemical seed treatment, good seeding practices and clean summerfallow gives effective control. Seed treatments with aldrin, dieldrin or lindane will kill most of the wireworms in severely infested fields.

Chemical and Rate—Use CO-OP Aldrin 50% Seed Dressing for wireworm control. CO-OP Dual Purpose Seed Dressing for control of both wireworms and seed borne diseases.

GRASSHOPPERS

Damage—At least 75 different species of grasshoppers are found on the prairies but only three or four species damage field crops and gardens. Swarms of small hoppers may partly or completely eat off the leaves and stems of plants. Heads or seed pods may be partly eaten or dropped to the ground.

Control—Watch for the annual grasshopper forecast in your province. Carry out cultural control measures recommended by agricultural authorities. Now that modern sprayers and dusters are available and with the development of modern insecticides, grasshopper control with chemicals has become convenient, effective and inexpensive. Timeliness of application is important.

Aldrin, chlordane, dieldrin, heptachlor, and toxaphene are grasshopper poisons suitable for use in spray, dusts and baits. In sprays and dusts these poisons should be applied to crop or grasslands to stop invasions from egg beds and to clean up infested crop, stubble and trap strips. Sprays can be applied with the modern boom sprayer. Dusts give varying results.

Chemical and Rate—Use CO-OP Toxaphene 50% Emulsion—1½ to two pints in sufficient water to cover one acre. CO-OP Aldrin Emulsifiable Liquid—¾ pint in sufficient water to cover one acre.



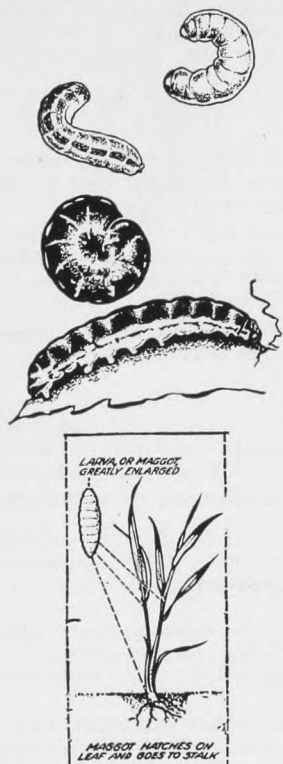
WHEAT STEM SAWFLY

Damage—The adult female lay their eggs in the wheat stems during two or three weeks, beginning about the middle of June. The grubs that hatch from these eggs feed inside the stems until just before harvest, then move to ground level, girdle the stem from the inside, and overwinter in the

underground stubs. The girdling weakens the stems so that it breaks off and harvesting is difficult. A loss in yield also results from the grub taking nourishment from the head.

Control—Follow the cultural and harvesting practices recommended by agricultural authorities. Grow either resistant crops or recommended resistant varieties.

Chemical and Rate—No chemical control measures available.



CUTWORM (Pale Western) uniform grey color—pest of the open prairie and park regions

Damage—They destroy plants by cutting completely through the young stems at or just below the soil surfaces. Damage normally occurs from late May until about June 20th.

Control—The cutworm forecast which outlines the general area within which an outbreak is expected to occur, should be watched for. Follow recommended cultural and cropping practices.

Chemical and Rate—Use CO-OP Toxaphene 50 % Emulsion—two pints in sufficient water to cover one acre. CO-OP 2½ % Aldrin Dust or CO-OP Aldrin Emulsifiable Liquid can be used.

CUTWORM (Redbacked)

Damage—Similar to pale western cutworm.

Control—Dieldrin, Chlordane, Toxaphene or Aldrin applied as emulsion sprays with low-pressure, low-volume sprayers are effective. Follow same cultural and cropping practices as recommended for pale western cutworm. Poison bait and sprays or dusts of the newer insecticides are effective in control. Sprays or dusts are recommended for field scale applications. Dieldrin, Aldrin, Chlordane and Toxaphene are recommended.

Chemical and Rate—Use CO-OP Toxaphene 50 % Emulsion—two pints in sufficient water to cover one acre. CO-OP 2½ % Aldrin Dust or CO-OP Aldrin Emulsifiable Liquid can be used.

HESSIAN FLY

Damage—Central shoot of wheat seedlings withered; stems of older plants sharply bent just above lowest joint, but not chewed; tiny maggots or brown "flax seeds" found between leaf sheath and damaged stem. Kernels from infested stems are shrunken.

Control—No practical control.

SAY'S GRAIN BUG

Damage—Wheat plants appear normal but kernels shrivelled, due to flattened green stink bug sucking juice from them in dough stage. Occasionally troublesome.

Control—Destroy hibernating bugs by burning weed trash along fences and road ditches in morning or evening in early spring.

Chemical and Rate—None.

WHEAT STEM MAGGOT

Damage—Infested wheat, rye, and barley heads empty, turn white prematurely, rest of plant remains green; stem chewed and discolored inside sheath at top joint by tiny white maggot.

Control—Loss rarely serious; no satisfactory control method known.

Chemical and Rate—None.

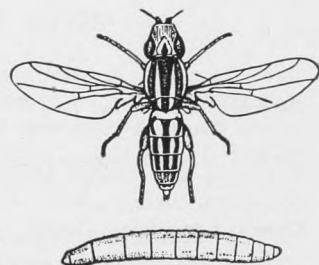
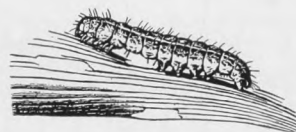
ARMYWORM

Damage—Large, dark, greenish-brown worms with conspicuous stripes down side, eat leaves, drop heads and panicles; damage continues in stook; worms feed late afternoon and evening, hide under clods and stooks by day; sometimes "march" in armies. They attack oats,

wheat, brome grass; occasionally other grains and grasses; rarely legumes.

Control—Spray infested crop when worms are feeding, applying ¾ pounds D.D.T. or 2 pounds toxaphene per acre; or dust, applying one pound D.D.T. per acre (all amounts are actual material) or scatter poison bait in afternoon or early evening just before worms become active. Stop migrating "army" with a deep furrow and poisoned bait.

Chemical and Rate—Use CO-OP Toxaphene 50 % Emulsion—two pints in amount of water necessary to cover one acre. CO-OP 3 %, 5 % or 10 % D.D.T. Dust.



WHEAT HEAD ARMYWORM

Damage—Ripening kernels of wheat and barley partly or wholly eaten by slender, striped, brown, tan or greenish worms; plant heads not cut off; worms frequently abundant in loads of straight combined grain, but damage does not continue after grain is cut. Occurs throughout prairie area.

Control—Reduce infestation of overwintering pupae by shallow fall tillage of heavily infested stubble. Avoid seeding wheat or barley on land heavily infested the previous year. If control of worms necessary, spray, applying $\frac{3}{4}$ pounds D.D.T. per acre, or dust, applying one pound D.D.T. per acre.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder. CO-OP 3 %, 5 % or 10 % D.D.T. Dust.

BERTHA ARMYWORM

Damage—Seeds, heads, flowers and leaves of flax, Argentine rape, sweet clover, alfalfa, vegetables; weeds eaten or dropped to ground in July and August by large conspicuous worms; color of the back varies from green to nearly solid black; armies may migrate out of destroyed fields.

Control—As soon as worms seen: Spray infested fields, applying $\frac{3}{4}$ pound D.D.T. or $1\frac{1}{2}$ pounds toxaphene per acre; or dust, applying one pound D.D.T. per acre. If honeybee colonies present in the district apply D.D.T. only at night. Use derris on edible foliage of vegetables. Reduce infestation of overwintering pupae in heavily infested fields by fall tillage three to four inches deep.

Chemical and Rate—Use CO-OP Toxaphene 50 % Emulsion—two pints in water necessary to cover one acre. CO-OP 50 % D.D.T. Wettable Powder. CO-OP 3 %, 5 % or 10 % D.D.T. Dust.

FLAX BOLLWORM

Damage—Brown bolls appear prematurely in green flax crop, seeds eaten out, round hole in side of boll, but bolls not dropped to ground; inconspicuous green worms live inside boll until partly grown.

Control—Reduce infestation of overwintering pupae by shallow fall tillage of heavily infested fields. No satisfactory control of the worms.

Chemical and Rate—None.

SWEET CLOVER WEEVIL

Damage—Crescent-shaped notches chewed in leaves of clover from early spring to late fall by small, inconspicuous, dark gray snout beetle; plants may be defoliated, seedling stands often destroyed. Occurs throughout the prairies.

Control—Avoid seeding new stands adjacent to infested sweet clover. In second year stands destroy insects by shallow tillage in late July, immediately after removing the hay crop. Plow defoliated field margins six inches deep in October. Prevent destruction of seedling crop by spraying $\frac{1}{2}$ pound of dieldrin or heptachlor, $1\frac{1}{2}$ pounds of D.D.T. or two pounds of Toxaphene per acre (both amounts actual material) when the shoots first appear through the ground in the spring.

Chemical and Rate—Use CO-OP D.D.T. 10 % Dust at 30 to 40 pounds per acre and 5 % Dust at 60 to 80 pounds per acre. CO-OP Aldrin Emulsifiable Liquid at the rate of two quarts per acre.



CORN EARWORM

Damage—The larvae vary in color from light green to dark and are similar in appearance to cut-worms. Kernels of corn near the tip of the ear are eaten.

Control—Control measures are very difficult but usually not necessary as infestations are local, occur frequently, and without warning. D.D.T. gives some control applied to the silks two or three times during the silking period.

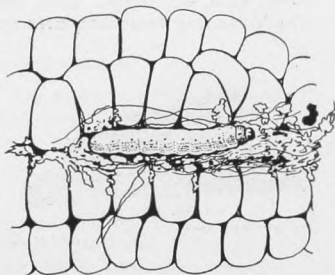
Chemical and Rate—None.

EUROPEAN CORN BORER

Damage—Full grown larvae are about one inch long, with small round brown dots. Found in all parts of stem or ear. Leaves may be eaten, stalks may break off and larvae will tunnel through the cob.

Control—Destroying overwintering larvae by deep fall or spring plowing. If chemical control necessary spray with D.D.T.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder—three pounds in 100 gallons water to cover one acre. CO-OP 25 % D.D.T. Spray Concentrate— $1\frac{1}{2}$ quarts in sufficient water to cover one acre.



APHIDS—ENGLISH GRAIN



Damage—Tiny green aphids cluster on heads and stems of wheat, oats, barley from mid-dough stage to harvest; no evidence of damage to plants or kernels.

Control—Control usually not necessary.

Chemical and Rate—None.

APHIDS—GREENBUG

Damage—Tiny green aphids cause seedlings to turn reddish-brown and die; damage may occur anytime from early July to freeze-up.

Control—Spray immediately damage is noted with Malathion.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid—1 ½ pints in sufficient water for good coverage.

LYGUS BUG

Damage—Alfalfa buds blasted, turn yellowish-white or gray; plants may be somewhat stunted; flowers fall prematurely; and small seed pods drop, leaving abundance of stripped racemes; discolored and shrunken seeds present before frost occurs.

Control—Early in the spring before growth starts burn alfalfa stubble and debris. When alfalfa is well budded, but before flowering is general, spray or dust with D.D.T. In fields where spring burning has been impossible watch for blasting as soon as buds appear; treat with D.D.T. immediately. In such fields a second application of D.D.T. may be necessary about mid-July if damage appears; if early treatment not required, treat only once, at regular time.

Chemical and Rate—Use CO-OP D.D.T. 10 % Dust, 30 to 40 pounds per acre. CO-OP D.D.T. 5 % Dust, 60 to 80 pounds per acre. CO-OP Spray Concentrate, 1 to 1 ½ quarts per acre.



INSECTS OF FARM STORED GRAIN

RUSTY GRAIN BEETLE, FUNGUS BEETLE, MITES

Damage—Unsatisfactory storage conditions are usually the cause of insect infestations in grain. Binning the grain when it is tough or damp, storing it in poorly constructed granaries that allow moisture to enter from the top, sides, or bottom, or storing it in granaries where poor ventilation results in moisture condensing at the surface of the grain, all lead to insect infestations. When grain becomes moist and begins to mould and heat, insects will multiply rapidly if they are present. Dry grain will not usually spoil or become infested.

Control—Store grain dry under satisfactory storage conditions. Clean granaries thoroughly before use and sprinkle with hydrated lime to dry them out. If granary had previously been infested with insects, spray the inside with 2 % Pyrenone or 1 % Lindane. Examine grain in storage every two weeks.

Move infested grain during the winter. Fumigation is the only effective method of control, and it can be used at any time of year.

Chemical and Rate—CO-OP Dawson Fumigant, 4 to 8 ¾-lb. cans per 1,000 bushels of grain. CO-OP Bulk Fumigant, for 1,000 bushels use 2 ½ to 3 ½ gallons in wooden bins and 1 ¾ gallons in steel bins. Use CO-OP Pyrenone Oil Spray in granaries before filling at rate of 2 to 4 ounces per 1,000 square feet.

Follow complete directions on the label.

GARDEN INSECTS

The garden may seem relatively unimportant to the economy of the prairies and yet on many farms the garden has a higher production on a per acre basis than any other piece of land. The garden not only has a high dollar value but equally important is the nutritive value of fresh vegetables during the growing season and in storage for winter use.

Too often insects take a heavy toll in the garden and discourage the gardener. Many insects attack garden crops, some attack a certain vegetable while others attack a wide range of vegetables.

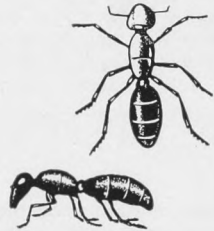
By knowing something about insects and being on the watch continually for them, damage can be kept to a minimum. Insecticides are available now, which are easy to apply, and can be used to control almost any garden insect. A few cents spent on an insecticide and used at the right time may save a garden crop.

ANTS

Damage—Make holes, mounds, and loosen soil around roots; invade houses. Often indicate presence of aphids.

Control—Dust or spray the infested area with Aldrin. Repeat weekly as long as ants are present.

Chemical and Rate—Use CO-OP Aldrin Wettable Dust, four ounces per 1,000 square feet.

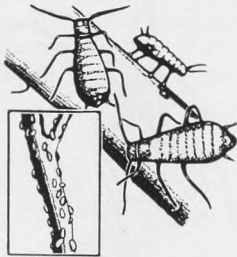


APHIDS—Plant Lice

Damage—Leaves of nearly all garden plants may be deformed, curled, discolored, by tiny soft sucking insects which cluster on the under surface of the leaves, tips of twigs, seed pods, etc. Heavily infested plants may wither and die.

Control—Spray infested plant with 50 % Malathion. Spray before the leaves are curled, and direct it specially against the undersides of leaves. Apply spray forcefully. Repeat as needed.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid, ¼ fluid ounces per gallon of water. CO-OP Flower and Garden Dust.



BEEF WEBWORM

Damage—Gardens quickly eaten by slim, small active caterpillars, green, marked with fine black lines and circles. Outbreaks occur in early July or in August. Armies migrate from weeds when these dry up or are eaten.

Control—To prevent invasion of gardens destroy all surrounding weeds in early June; or spray or dust weeds with Aldrin or Toxaphene. If gardens or crops are infested, spray or dust non-edible foliage with Toxaphene or Aldrin applying two pounds technical per acre. If necessary to treat edible parts of plants use only Pyrethrum or Derris.

Chemical and Rate—Use CO-OP Aldrin 2½ % Wettable Dust, ½ to 1 ounce per 200 square feet. CO-OP Derris Garden Duster. CO-OP Toxaphene 50 % Emulsion, 1 quart in the amount of water required to cover one acre. CO-OP Flower and Garden Dust.



BLISTER BEETLES

Damage—Blossoms and leaves of broadbeans, onions, caragana, potatoes, beets, honeysuckle and ash devoured by large soft active, slender beetles, blue, bronze, black, gray, or spotted. Appear suddenly, often in large swarms, May to August.

Control—On edible portions of plants spray or dust beetles with Pyrethrum, or Derris, on shrubs or potatoes use D.D.T. Aldrin, or Chlordane emulsible concentrate sprays. Act promptly. Repeat daily as long as beetles are present.

Chemical and Rate—Use CO-OP Derris Garden Duster, CO-OP Derris Dust, CO-OP Aldrin 2½ % Wettable Dust. CO-OP Flower and Garden Dust.



CABBAGE WORMS

Damage—Large circular holes eaten in leaves and hearts of cabbage, cauliflower and turnip plants by green caterpillars. Masses of soft green pellets. Color of caterpillar similar to the color of cabbage and damage occurs throughout the summer.

Control—Dust young plants with Derris, Pyrethrum or D.D.T. 50% Wettable Powder, two tablespoonfuls per gallon of water. Use only Derris or Pyrethrum after heads begin to form.

Chemical and Rate—Use CO-OP Derris Garden Duster, CO-OP Derris Dust, CO-OP Flower and Garden Dust, CO-OP 50% Wettable Powder.



CUTWORMS

Damage—Stems of all garden crops may be cut off at, or just below, ground level by dull colored, fleshy caterpillars which curl up when disturbed. Feed by night, hiding in soil by day. Damage occurs in May and June.

Control—Scatter poisoned bait on a warm evening or spray soil surface with Dieldrin, Aldrin, using one gallon per 500 square feet, or two pounds of actual Toxaphene per acre, or use a prepared dust. Do not apply sprays or dusts on edible portions of plants. Best results when applied every spring before garden is up. Protect cabbage plants, etc. with can or paper collars sunk three inches in soil.

Chemical and Rate—Use CO-OP Aldrin 2½% Wettable Dust—1 lb. per 200 square feet, work into soil, or use as a side dressing in the row after planting. CO-OP Toxaphene 50% Emulsion.



FLEA BEETLES

Damage—Small round holes eaten in leaves, of cabbage, turnips, radishes, potatoes, etc., and in fall seed pods damaged by tiny quick jumping beetles. Early seedlings may be destroyed. Present in spring until July and again from August onwards.

Control—Dust or spray with Derris or D.D.T. 50% Wettable Powder or 3% or 5% D.D.T. Dust as soon as plants emerge or are transplanted. Repeat as necessary. Use Derris on cabbage after heads are formed, on radishes after roots protrude above ground, and on all edible foliage.

Chemical and Rate—Use CO-OP Derris Garden Duster, CO-OP D.D.T. 10%, 5% or 3% Dust, CO-OP 50% Wettable Powder. CO-OP 25% D.D.T. Spray Concentrate. CO-OP Flower and Garden Dust.



GRASSHOPPERS

Damage—All garden crop plants devoured quickly by adults and young hoppers.

Control—Broadcast poisoned bait when hoppers begin to feed, or spray non-edible foliage in and around garden with emulsible concentrate sprays of Aldrin, Dieldrin, Heptachlor, or Toxaphene. Repeat as necessary.

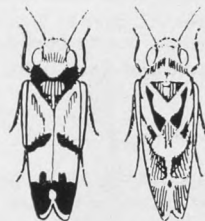
Chemical and Rate—Use CO-OP Aldrin 2½% Wettable Dust, 3 ozs. per 200 square feet. CO-OP Toxaphene 50% Emulsion.

GRAPELEAF HOPPER

Damage—Yellow spotting and drying of the leaves of Virginia creeper and grape with the damage developing from the ground upwards till leaves drop in July and August. Very small yellowish, sucking insect; immature stage wingless and on undersurface of leaves; mature stage winged, very active. Spring and summer.

Control—Spray both sides of the leaves thoroughly with D.D.T. Methoxychlor or Malathion as soon as creeper is well leafed out and again during mid-July or whenever leafhoppers become abundant. Community action desirable.

Chemical and Rate—Use CO-OP Flower and Garden Dust, CO-OP 50% Methoxychlor Wettable Powder, 2 tablespoons per gallon of water. CO-OP Malathion 50% Liquid, 1 teaspoonful per gallon of water.





COLORADO POTATO BEETLE (Bug)

Damage—Foliage of potatoes devoured by round backed yellow beetles with 10 black stripes and by fat reddish grubs. Throughout summer.

Control—Dust the plants with Derris or D.D.T. or apply D.D.T., Aldrin, Toxaphene or Chlordane Emulsible Concentrate Sprays as soon as beetles or grubs appear on plants.

Chemical and Rate—Use CO-OP Garden and Flower Dust, CO-OP Derris Garden Duster, CO-OP D.D.T. 10%, 5% or 3% Dust, CO-OP 5% D.D.T. 7% Copper Dust, CO-OP 3% D.D.T. 7% Copper Dust, CO-OP Aldrin 2½% Wettable Dust, CO-OP Methoxychlor Wettable Powder, CO-OP 50% D.D.T. Wettable Powder and CO-OP 25% D.D.T. Spray Concentrate.

RASPBERRY MITE

Damage—Raspberry leaves turn brown and dry up. Under surfaces of leaves covered by very fine silken web. Pest almost too small to be seen. Most troublesome in dry years.

Control—Spray with Derris or Malathion as soon as first symptoms seen. Repeat as needed but do not apply Malathion within 14 days of picking fruit.

Chemical and Rate—Use CO-OP Garden and Flower Dust. CO-OP Malathion 50% Liquid—one teaspoonful per gallon of water.

ROOT MAGGOTS (Cabbage, Turnip, Cauliflower and Radish)

Damage—Root surface grooved, or flesh bored into by small, white legless maggots. Young plants killed, older plants wilt. Adults similar to houseflies: lay tiny, elongated, white eggs on or near base of stem; beginning early to mid-July and continuing to end of August.

Control—Use Aldrin Wettable Powder as a spray or dust. Repeat twice at intervals of 10 days. Insecticide must be applied before maggots enter roots. This treatment may be effective on cabbage and cauliflower. No recommendation for radish.

Chemical and Rate—Use CO-OP Aldrin 2½% Wettable Dust; apply to flats before transplanting or mix in soil before planting or use after planting.

ROOT MAGGOTS (ONION)

Damage—Seedlings wilt and die. Roots and lower stems tunnelled by maggots. Infested onions rot. Eggs, maggots, and adults similar to above. First generation eggs laid late May to early June, and second generation mid-to-late July. Throughout summer, but worst in June.

Control—Use Aldrin 2½% Wettable Dust applied to the soil before planting or after planting in a 6-inch band in the row or as a drench to the base of the plant. Follow detailed directions on the label.

Chemical and Rate—Use CO-OP Aldrin 2½% Wettable Dust. Follow directions on the label for use before or after planting.



ROSE CURCULIO

Damage—Rose buds and flowers ruined by holes bored by small red and black snout beetles. Approximately mid-June to mid-July.

Control—As soon as buds appear, dust or spray buds and foliage with D.D.T. Keep well covered with insecticides during beetle period. Burn damaged buds.

Chemical and Rate—Use CO-OP Flower and Garden Dust.

SUNFLOWER BEETLE

Damage—Holes eaten in sunflower leaves, flower bracts and petals by a round-backed, cream colored beetle with black stripes, and by fat yellowish green grubs. June to August.

Control—Destroy mustard weeds in and around garden early in the spring. Dust infested plants with Derris, or dust or spray non-edible foliage with D.D.T.

Chemical and Rate—Use CO-OP Derris Garden Duster. CO-OP Flower and Garden Dust.

TURNIP BEETLE

Damage—Leaves of turnip, cabbage and cauliflower eaten by red and black striped beetles. Invade fields and gardens from nearby rape, mustard, peppergrass, etc., in latter part of June and again in August.

Control—Spray with D.D.T., Chlordane, Toxaphene or Aldrin emulsible sprays or apply dusts of these insecticides.

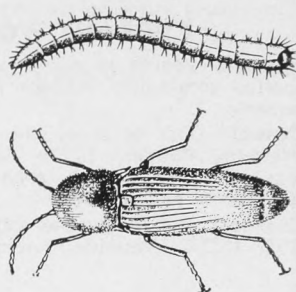
Chemical and Rate—Use CO-OP Aldrin 2½ % Wettable Dust. CO-OP 50 % D.D.T. Wettable Powder.

WIREWORMS

Damage—Seedlings of many garden plants wilt and die from underground boring by slender, hard bodied, shiny, yellow worms. Seeds and sprouts destroyed. Potato tubers, carrots, etc. tunnelled.

Control—Destroy wireworms by chemical soil treatment. Use 2½ % Aldrin and apply in the fall and work into the top 4 to 6 inches of soil. Use at the rate of ½ to 1 pound per 200 square feet.

Chemical and Rate—Use CO-OP Aldrin 2½ % Wettable Dust—½ to 1 lb. to 200 square feet, work into soil to a depth of 4 to 6 inches.



Shelter Belt, Shade Tree and Orchard Insects

Some shelterbelt and shade trees are relatively free from insects while others are very subject to damage from a number of insects. Control is more difficult and special spray equipment is necessary. Trees on the prairies are particularly important. Every effort should be made to protect them from insects. Occasionally valuable trees or complete shelterbelts, which have taken years to grow, may be wiped out if insect control measures are not carried out.

The orchard although not important commercially on the prairies, is an important source of fruit for the family. Many insects feed entirely on fruit bushes or trees, if left uncontrolled, total loss of the fruit crop may result.

In many cases regular spray programs must be carried out for insect control, otherwise a very inferior crop will be the result.

More trees are lost every year by insects than are destroyed by forest fires.

APHIDS—Spruce, Pine, Tamarack, Balsam

Damage—Clusters of small, soft brown, green or black insects on the trunks, branches or twigs or in the distorted needles at the tips of the twigs.

Control—Spray trees thoroughly with Nicotine Sulphate or Malathion. CO-OP Flower and Garden Dust—when only one or two small trees infested. CO-OP Malathion. 50 % Liquid—1 to 2 pints per 100 gallons of water.

APHIDS—Caragana, Maple, Elm, Poplar, Willow, Ash, Fruit Trees

Damage—Leaves curled or discolored by small, soft insects which cluster on the trunk, branches, leaves or seed pods.

Control—Use 50 % Malathion, 1 teaspoonful per gallon of water or 40 % Nicotine Sulphate plus a small amount of soap in 1 gallon of water.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid—1 teaspoonful per gallon of water. CO-OP Flower and Garden Dust if only a few trees infested.

BLISTER BEETLES

Damage—Blossoms and leaves of caragana, ash, lilac, or honeysuckle spray devoured by swarms of large, active beetles black or metallic green in color.

Control—Spray foliage with D.D.T., Aldrin or Chlordane. If 50 % Wettable Powders used, use 2 tablespoonsful in 1 gallon of water. Prepared dusts may be used.

Chemical and Rate—Use CO-OP Derris Garden Duster. CO-OP Flower and Garden Dust. CO-OP 50 % D.D.T. Wettable Powder, 2 tablespoonsful in 1 gallon of water.



BORERS



Damage—Trees or branches of poplar, ash, birch, pine, spruce and fruit trees weaken and die; holes in the stem and branches, or areas of dead, loose bark, caused by whitish grubs burrowing in the wood. Grubs present all year.

Control—Requires special treatment. Obtain information from Agricultural Authorities.

Chemical and Rate—None.

CURRENT WORM OR CATERPILLAR

Damage—Leaves of currants and gooseberries devoured by green, spotted caterpillars. Appear with first leaves and occur throughout summer.

Control—Dust or spray the foliage with Derris or 50 % D.D.T. Wettable Powder, $\frac{1}{4}$ lb. in 25 gallons of water, as soon as leaves are well formed; repeat as necessary. After fruit appears use only Derris or Pyrethrum.

Chemical and Rate—Use CO-OP Flower and Garden Dust. CO-OP 50 % D.D.T. Wettable Powder. CO-OP Derris Dust.

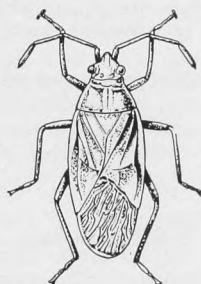


CURRENT FRUIT FLY OR MAGGOT

Damage—Infested fruit of currants and gooseberries ripen and drops prematurely. Tiny white maggot feeds within the berry.

Control—Control difficult. Spray bushes until they drip with D.D.T. or Methoxychlor (1 tablespoonful 50 % Wettable Powder to 1 gallon of water) when 80 % of the blossoms have withered or fallen, and again 10 days later.

Chemical and Rate—Use CO-OP Flower and Garden Dust. CO-OP 50 % D.D.T. Wettable Powder. CO-OP 50 % Methoxychlor Wettable Powder.



BOXELDER BUG

Damage—Attacks maple, boxelder, ash. An annoying house pest, clustering on sunny walls and invading dwellings in autumn. Young are wingless, scarlet; adults $\frac{1}{2}$ inch long, winged, flat, black with red lines.

Control—On outside walls or trees, spray with 50 % D.D.T. or 50 % Malathion. In houses, household fly sprays may be used.

Chemical and Rate—Use CO-OP Flower and Garden Dust. CO-OP Malathion 50 % Liquid. CO-OP 50 % D.D.T. Wettable Powder. CO-OP Household Spray.

CANKERWORM

Damage—Small holes appear in leaves of maple, elm, ash and fruit trees; later foliage is completely eaten by brownish-green caterpillars which spin silken threads. Present in May and June.

Control—As soon as damage appears, spray trees with 1 lb. of D.D.T. 50 % Wettable Powder in 40 gallons of water, or spray tree trunks with 50 % D.D.T. Wettable Powder, 4 pounds to 10 gallons of water, about mid-September.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder.



CECROPIA CATERPILLAR

Damage—Leaves of maple, poplar, ash, elm and fruit trees rapidly eaten in June and July. Young caterpillars are blackish, spiny; older caterpillars are large, green with vari-colored projections. Winter in large, brown, silken cocoons on twigs and weeds.

Control—Spray or dust with D.D.T. when caterpillars first noticed. Destroy caterpillars and cocoons by hand picking.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder.

LEAF BEETLES

Damage—Foliage of poplar and willow eaten by black grubs, causing scorched appearance, or devoured by small to medium vari-colored beetles, from May to August.

Control—Spray or dust foliage with D.D.T.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder

TENT CATERPILLAR

(1) Orchard

(See full page illustration on inside back cover)

Damage—Leaves of rose, gooseberry, cherry and apple eaten in May and June by dark, hairy caterpillars that construct conspicuous tents of white silk.

Control—Cut out and destroy tents during cool weather or at night, or dust or spray insects with D.D.T., Derris or Pyrethrum.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder. CO-OP Derris Dust. CO-OP Flower and Garden Dust.

(2) Forest

Damage—Leaves of poplar and willow eaten in May and June by dark, hairy caterpillars that cluster on trunks and branches but do not make tents; caterpillars often migrate in "armies."

Control—Spray or dust insects with D.D.T.

Chemical and Rate—Use CO-OP 50 % D.D.T. Wettable Powder.

SPRUCE MITE

Damage—Needles of spruce and larch eaten by small green, brownish or greyish-green "caterpillars" with shiny red or black heads; on spruce in June; on larch in July.

Control—Spray trees thoroughly with Aldrin Wettable Dust or 50 % Wettable D.D.T.

Chemical and Rate—Use CO-OP Aldrin 2½ % Wettable Dust, 1 lb. per 20 gallons of water. CO-OP 50 % D.D.T. Wettable Powder, 1 lb. in 40 gallons of water.

SAWFLIES

Damage—Yellowish mottling of needles of spruce with fine, silk webbing around twigs between needles; mites almost too small to be seen, present from early May to end of season.

Control—Spray trees thoroughly with 50 % Malathion.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid, 2 teaspoonfuls per gallon of water. CO-OP Flower and Garden Dust.

PINE NEEDLE SCALE



Damage—Yellowish mottling of needles, of spruce and pine caused by small waxy, white, elongate scale insects up to ⅛ inch long that are present on the needles all year. Insects suck the plant sap and with a severe infestation the whole tree will have a brownish appearance.

Control—Spray trees thoroughly with Malathion 50 % emulsible concentrate, ½ pint to 12 gallons of water, at the end of first week in June, and again during second week in August.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid (4 teaspoonful to 1 gallon of water). CO-OP Flower and Garden Dust if only a few trees infested.

LIVESTOCK AND POULTRY INSECTS

No accurate estimate can be made of the loss annually from insects on domestic animals, certainly it is high.

During fly time, animals go out of condition, beef cattle lose flesh and dairy cattle go down in milk production. The warble fly alone causes high losses in damage to hides and beef carcasses. Lice and mites on livestock and poultry result in unhealthy run down animals. Many diseases of livestock are transmitted by insects.

Although losses from insects are high control measures are effective and relatively inexpensive. Insecticides are now available, which, when used correctly, control most of our common livestock and poultry insects. Although complete eradication may be impossible, control measures can keep losses to a minimum.

CATTLE WARBLER (Heel Flies or Gadflies)



Damage—Flies do not bite or sting, but in laying eggs on legs or lower part of body worry and frighten animals and cause gadding which reduces milk yields and weight gains. Grubs cause general unthriftiness, milk and meat yields are reduced and hides, damaged.

Control—Community action highly desirable but individual control also effective. Treat with commercial warble powder. Time: begin in early March, or when holes in hide are about as big around as lead pencil. Treat at 30-40 day intervals as long as live grubs are present. Method: (a) in small herds and dairy cattle, scrub the warble wash over the backs of cattle with a stiff brush or rub the powder thoroughly into holes, (b) in large herds use a power sprayer.

Chemical and Rate—Use CO-OP Warble Powder—1 lb. to 6 quarts of water.

HORSE BOTS (and Nose Flies)

Damage—Flies do not bite or sting but terrorize animals while laying eggs on legs, lips and throats. Grubs attach to wall of stomach, intestine and anus; cause run-down condition and sometimes death.

Control—Provide darkened shelters for pastured animals. Use nose muzzle or underjaw protection. Treatment by veterinarian with carbon bisulphide capsules before December 15th will destroy bot fly larvae.

Chemical and Rate—None.



HORSE FLIES (Deer Flies, Bulldogs)

Damage—Cause painful bites, loss of blood, and irritate animals. May transmit disease. Irritation during grazing result in loss of flesh or in the case of dairy cattle, drop in milk.

Control—Provide darkened shelters for animals. Use Pyrenone livestock sprays. Apply to animal daily or twice weekly. Fly nets or covering may help.

Chemical and Rate—Use CO-OP 50% Methoxychlor Wettable Powder. CO-OP Malathion 50% Liquid. CO-OP Malathion Barn Spray.



STABLE FLIES

Damage—Vicious suckers and cause painful bites and loss of blood. May transmit disease.

Control—Eliminate breeding places; spread manure and wet litter. Spray Methoxychlor or Malathion as a residual spray in barns and livestock buildings.

Chemical and Rate—Use CO-OP Barn Spray Malathion—used as a spray or in bait. CO-OP 50% Methoxychlor Wettable Powder for livestock—1 lb. per 12 gallons of water as a spray for buildings—1 lb. per 2½ gallons of water. CO-OP Livestock Spray and CO-OP Livestock Bomb.



HORN FLIES



Damage—Irritation and loss of blood caused by small, dark grey, biting flies about half the size of house flies clustering at base of horns and on the withers of cattle, live on cattle both day and night. Sometimes attack sheep and horses.

Control—Dairy animals may be treated with Methoxychlor or with Pyrethron Livestock Spray. High pressure sprayers with special booms can be used to spray ranch cattle. Malathion and Methoxychlor can be used as a residual spray in barns and livestock buildings.

Chemical and Rate—Use CO-OP Barn Spray Malathion .CO-OP 50% Methoxychlor Wettable Powder—as a Livestock Spray 1 lb. per 12 gallons of water, as a spray for buildings, 1 lb. per 2½ gallons of water. CO-OP Livestock Spray. CO-OP Livestock Bomb. CO-OP 25% D.D.T. Spray Concentration.

MOSQUITOES

Damage—Mosquitoes annoy animals and weaken them through removal of blood. May transmit disease. Larvae are found mainly in temporary pools in weedy roadsides, ditches and temporary pools in pasture depressions. Our species do not breed in extensive sloughs nor in dugouts.

Control—Drain breeding places (temporary pools in grassy areas and weedy ditches) in entire community or kill larvae soon after pools form in the spring with a film of oil, with or without D.D.T. added (1/10 to ¼ pound per acre). Kill adults with 2 pounds D.D.T. per acre applied as 5% solution, emulsion or suspension, to vegetation and buildings to a height of 10 feet.

Chemical and Rate—Use CO-OP 50% Wettable Powder or CO-OP 25% D.D.T. Spray Concentrate. CO-OP Livestock Spray. CO-OP 50% Methoxychlor Wettable Powder. CO-OP Livestock Insect Bomb.



BLACK FLIES



Damage—Feeding by small hump-backed greyish flies on thinly haired parts of body particularly cows, and bulls, cause loss of blood soreness, swellings, serious illness or may cause death within a few hours of first mass attack late in May or in June. Milk production may be reduced for several days. These black flies breed only in moderately rapidly flowing water.

Control—Watch carefully in late May and early June for black flies; as soon as they appear stable valuable bulls and milk cows. Use smudges to protect animals that cannot be stabled. Damage most common within 50 miles of breeding areas. D.D.T. Emulsion applied to infested streams has given good control.

Chemical and Rate—Use CO-OP 25% D.D.T. Spray Concentrate.

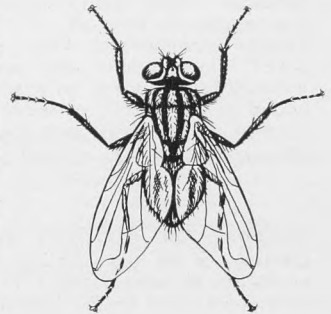
HOUSE FLIES

(and other flies in barns and other buildings)

Damage—The house fly is a carrier of human diseases, transmitter of diseases of animals, intermediate host of various parasitic worms which it transmits to domestic animals. Maggots found in manure, garbage, and other decomposing matter.

Control—Sanitation is essential. Eradicate breeding places in barnyards, barns and feedlots. Treat privies every other day with chloride of lime. Spray interior and exterior of barns, sheds, chicken houses, privies, etc. with a residual spray of D.D.T., Methoxychlor, or Malathion. Do not use D.D.T. in dairy barns or milk houses or where flies resistant to D.D.T. Pyrethron space sprays can be used safely indoors to obtain immediate control. Follow directions on the container.

Chemical and Rate—Use CO-OP 50% Wettable Powder or CO-OP 25% D.D.T. Spray Concentrate. CO-OP Livestock Spray. CO-OP Barn Spray—Malathion. CO-OP 50% Methoxychlor Wettable Powder, for cattle—1 lb. to gallon of water; for buildings—1 lb. in 2½ gallons of water. CO-OP Livestock Bomb.



SHEEP NASAL OR BOT FLY

Damage—Grubs laid around nostrils; feed in nose and sinuses, causing a discharge. Sheep stop feeding and huddle together, press nose against other objects and seek shelter.

Control—Pasture rotation and darkened shelters are helpful in protecting sheep. Pine tar dressing on nose of sheep when adult flies are active will prevent them from depositing larvae in the sheep's nostrils.

Chemical and Rate—None.



SHEEP KEDS (Miscalled Sheep Ticks)

Damage—Brownish flattened tick-like insect about 1/4 inch long. Pollutes fleece and causes unthriftiness due to loss of blood and irritation. Animals damage fleece by rubbing.

Control—Run sheep in pens or chutes and spray thoroughly with Toxaphene, Methoxychlor, Chlordane, Lindane or Rotenone. Rotenone is safe immediately following shearing. One week to 10 days should elapse to allow cuts to heal before Chlordane or Toxaphene is applied. A thorough wetting is necessary. Follow carefully manufacturers' directions.

Chemical and Rate—Use CO-OP Livestock Spray. CO-OP Barn Spray Malathion. CO-OP 50 % Methoxychlor Wettable Powder—1 lb. to 12 gallons of water.

TICKS (not to be confused with Sheep Keds)

Damage—Ticks attach to animals running on infested scrub-covered pastures and ranges, particularly in May and June; suck blood, causing weakness. May transmit diseases, such as Rocky Mountain spotted fever and tularaemia.

Control—Destroy rodents on ranges. Keep animals off infested areas. Spray infested animals with Toxaphene or Lindane. Individual ticks may be removed by brushing them with kerosene.

Chemical and Rate—Use CO-OP Animal Insect Powder.

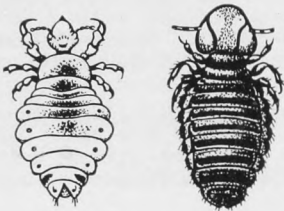


LICE (of Cattle, Horses, Swine, Sheep)

Damage—Biting and sucking lice cause irritation by sucking blood and crawling on animals. Animal's rubbing causes lesions and loss of hair.

Control—Wash, dip, spray or dust with Rotenone, Methoxychlor, Pyrenone, Lindane, Toxaphene, or Chlordane using wettable powders, emulsible concentrates or dusts at dilutions recommended by the manufacturer. Animals should be treated twice, 12-14 days apart. Treatment should be carried out in the fall before cold weather. Only Rotenone, Pyrenone and Methoxychlor are permissible for use on dairy cattle. D.D.T. and Lindane should not be used on animals within one month of slaughter. Warble powders are effective for louse control.

Chemical and Rate—Use CO-OP Livestock Spray. CO-OP Barn Spray Malathion. CO-OP 50 % Methoxychlor Wettable Powder—1 lb. to 12 gallons of water. CO-OP Warble Powder. CO-OP Louse Powder.

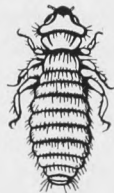


LICE (of Poultry)

Damage—Cause loss of appetite resulting in listless unhealthy birds. Egg production falls off.

Control—Commercial louse powders containing sodium fluoride, D.D.T., or Lindane are satisfactory. Clean all poultry houses thoroughly and spray with Lindane 50 % wettable powder using 1 pound in 10 gallons of water. 1 % oil solution of Lindane may be painted on the roosts and other structures.

Chemical and Rate—CO-OP Louse Powder.



MITES

Damage—Scaly legs. Suck blood at night. On roosts and walls during day.

Control—Scrub, then dip legs in equal parts of kerosene and raw linseed oil. Clean and spray chicken houses as recommended for chicken lice. Fumigate poultry house with formalin and potassium permanganate just before removing pullets in from the range. House must be empty when fumigated. Paint roosts with 1 % oil solution of Lindane.

Chemical and Rate—Use CO-OP Malathion 50 % Liquid—1/2 to 1 pint per 6 gallons of water. Spray houses and roosts thoroughly.

HOUSEHOLD INSECTS

Household insects are a source of annoyance and embarrassment. They not only attack man but his food, clothing and furniture as well. Sanitation at one time was the only means of control, however, most household insects can now be controlled cheaply and easily by chemical means.

FLIES

Damage—The house fly is world wide in distribution and is notorious for the part it plays in the spread of many dangerous diseases. It breeds in filth, such as manure and garbage and is a menace to public health as it often flies directly from filth to human foods.

Control—The most effective and desirable method of control is elimination of breeding places. Materials such as manure and garbage should be treated or properly disposed of. Control measures directed against the breeding places should be organized on a community basis. The chemicals, D.D.T. and Malathion are effective in controlling flies, both as a spray on breeding places and around buildings. Malathion may also be used as a bait.

Chemical and Rate—Use CO-OP Malathion Barn Spray as a spray or bait. CO-OP Household Bug Bomb. CO-OP New Residual Household Spray or CO-OP 50% Methoxychlor Wettable Powder—1 lb. to 2½ gallons of water.



MOSQUITOES



Damage—A menace and an annoyance to man. Mosquitoes have piercing sucking mouth parts and feed upon human blood and the blood of other animals.

Control—Mosquitoes develop in stagnant pools of water. The most satisfactory means of control is elimination of their breeding places, either draining, filling, or treating the surface of the water. The surface can be treated with a petroleum oil or D.D.T. Chemical sprays are effective in controlling mosquitoes in and around dwellings.

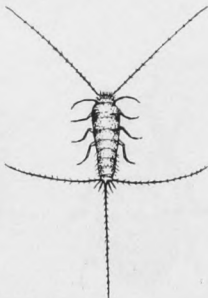
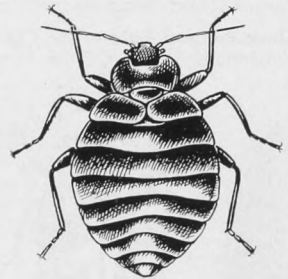
Chemical and Rate—Use CO-OP Household Bug Bomb. CO-OP New Residual Household Spray. CO-OP Methoxychlor Wettable Powder, 1 lb. to 2½ gallons of water. CO-OP Malathion Barn Spray.

BED BUGS

Damage—They are found most commonly in old buildings, hotels and boarding houses. They have blood sucking habits, an obnoxious odor and can exist for long periods without food. The effect of their bite varies with different individuals, causing little or no discomfort in some and swellings and inflammation in others.

Control—Control by fumigation has been effective but must be carried out by an expert in this field. Chemical sprays are now available which give effective control. All cracks in the walls, floors, joints of beds, etc., of infested buildings can be sprayed with a 5% D.D.T.

Chemical and Rate—Use CO-OP Household Bug Bomb. CO-OP New Residual Household Spray.



SILVERFISH

Damage—They are a widespread pest in dwellings, libraries, bake-shops, and other buildings where warm moist situations exist. They are found on floors and walls and in and among papers, books and clothing. They are usually more annoying than injurious. Silverfish feed mainly on starchy materials, and glue, and so may cause damage to glazed papers and book bindings. They also attack starched clothing and feed on dry foodstuffs containing starch.

Control—Spray surface and cracks frequented by Silverfish with a D.D.T. in oil or dust. Repeat application if necessary.

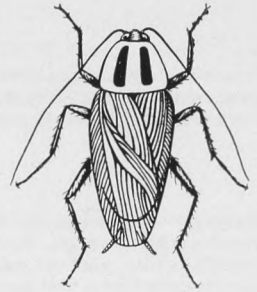
Chemical and Rate—Use CO-OP New Residual Household Spray. CO-OP Household Bug Bomb.

COCKROACHES

Damage—They may frequent any building, hotel, dwelling house, or store, where there are warm moist conditions and a supply of food. They are particularly fond of foods favored by man.

Control—Control can be readily carried out with D.D.T. Insecticide. Make sure D.D.T. spray or dust does not come in contact with foods.

Chemical and Rate—Use CO-OP New Residual Household Spray. CO-OP Household Bug Bomb.



FLEAS

Damage—May be troublesome in houses during the late summer and early fall. Their mouth parts form a lance-like piercing organ with which they penetrate the skin of their victim and suck blood. Besides the discomfort they cause, they may transmit organisms and disease to man.

Control—Cats and dogs are usually the source of infestation, so steps should be taken to rid them of fleas. A small amount of D.D.T. Dust can be dusted into the hair of the dogs. Pyrethrum or Derris Powder should be used on cats. A 5% D.D.T. Spray or a 10% Dust can be applied to floors and other infested places. Methoxychlor is also effective.

Chemical and Rate—Use CO-OP New Residual Household Spray. CO-OP Household Bug Bomb or CO-OP 50% Methoxychlor Wetttable Powder, 1 pound per 12 gallons of water.

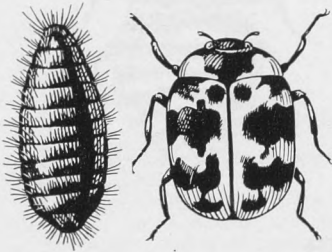
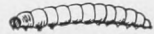


CLOTHES MOTHS

Damage—Clothes moths cause extensive damage to materials of animal origin such as woollens, furs, hair, feathers, etc. Damage is caused by feeding of the larvae or caterpillar and not by the winged moth whose principal function is to mate and deposit eggs.

Control—Cleanliness and good housekeeping are important in moth control. Newer chemicals have made control more effective. A 5% D.D.T. Spray applied to the walls of clothes cupboards and other storage places will help to control adult moths. Surface spraying of clothing and other materials also give some protection from larvae. Lindane and Methoxychlor are also effective.

Chemical and Rate—Use CO-OP Moth Crystals. CO-OP New Residual Household Spray. CO-OP Household Moth Bomb.



CARPET BEETLES

Damage—They frequently do damage to carpets but also do damage to woollens and other material of animal origin and are often associated with clothes moths.

Control—Similar control measures for carpet beetles as for moths. Use a 10% D.D.T. Powder or 5% D.D.T. Solution.

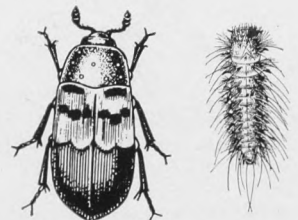
Chemical and Rate—Use CO-OP New Residual Household Spray. CO-OP Household Bug Bomb.

LARDER BEETLE

Damage—Feed on meats and animal produces of all kinds, such as feathers, skins, hair, beeswax, ham, bacon, dried beef and similar products.

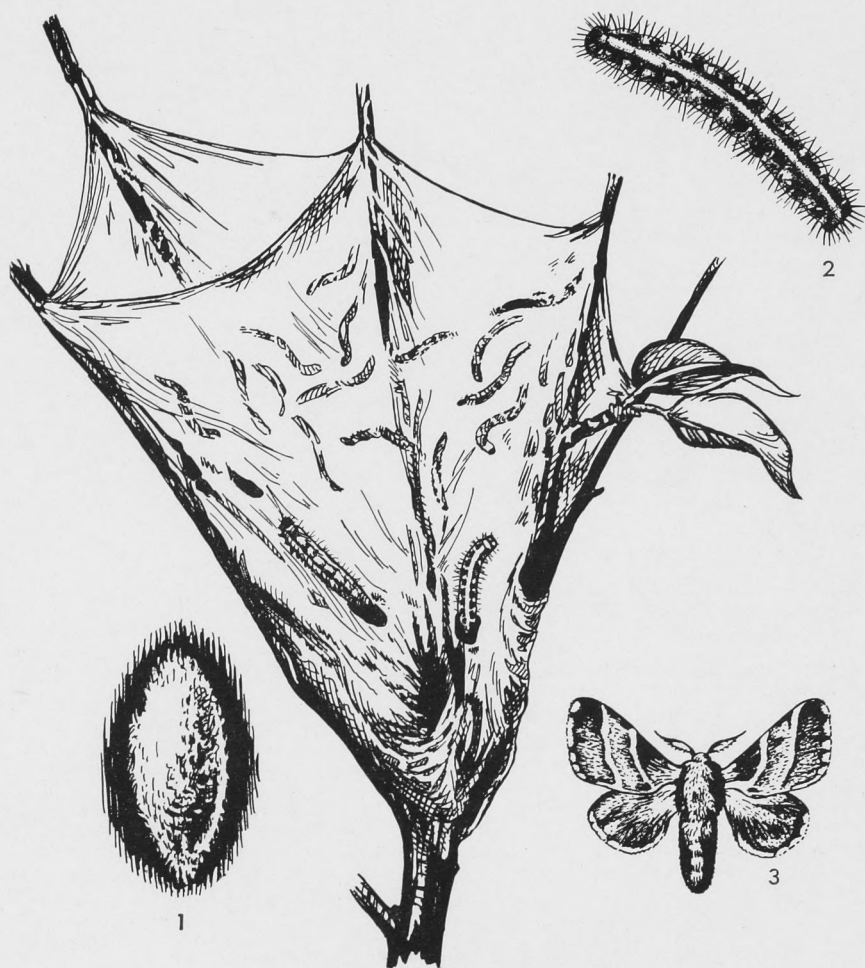
Control—Portions of food found infested should be removed and destroyed and the pantry or storeroom thoroughly cleaned. Chemical dusting or spraying with D.D.T. or Pyrethrum is effective. D.D.T. Spray or Dust should not come in contact with food or dishes used for food.

Chemical and Rate—Use CO-OP New Residual Household Spray. CO-OP Household Bug Bomb.



ORCHARD TENT CATERPILLAR

(See Page 11)



A tent of the Orchard Tent Caterpillar, also showing stages of the life cycle. 1, Cocoon; 2, Larva; 3, Adult.

REMEMBER . . .

There is a CO-OP Chemical Formulation for every need

SEE . . .

Your local CO-OP for Descriptive Booklets on any of the following formulations.

BUY AND USE . . .

CO-OP Chemicals with confidence.

INSECTICIDES

CO-OP Aldrin Emulsifiable Liquid
CO-OP Animal Insect Powder
CO-OP Derris Dust
CO-OP Garden Duster
CO-OP Derris Garden Duster
CO-OP Flower and Garden Dust
CO-OP Fixed Copper Fungicide
CO-OP Potato, Tomato Dust
CO-OP Aldrin 2½ % Wettable Dust
CO-OP 3 % D.D.T. Dust
CO-OP 10 % D.D.T. Dust
CO-OP 3 % D.D.T.—7 % Copper
CO-OP 5 % D.D.T.—7 % Copper Dust
CO-OP 3 % D.D.T.—3.9 % Zineb
CO-OP 5 % D.D.T. Dust
CO-OP 50 % D.D.T. Wettable Powder
CO-OP 25 % D.D.T. Spray Concentrate
CO-OP 50 % Methoxychlor Wettable Powder
CO-OP Barn Spray Malathion
CO-OP Malathion 50 % Liquid
CO-OP Livestock Spray
CO-OP Insect Bomb Household
CO-OP Insect Bomb Livestock
CO-OP Warble Powder
CO-OP Louse Powder
CO-OP Household Spray
CO-OP Moth Crystals
CO-OP Moth Bomb
CO-OP Toxaphene 50 % Emulsion

FUMIGANTS AND STORED GRAIN INSECTICIDES

CO-OP Dawsons Fumigant 73
CO-OP Bulk Fumigant
CO-OP Pyrenone Oil Spray
CO-OP Lindane Spray Concentrate

HERBICIDES

CO-OP Ester Liquid 2,4-D
CO-OP Low Volatile Ester 64 oz.
CO-OP Amine Liquid 2,4-D
CO-OP Ester Dust 2,4-D
CO-OP M.C.P. Ester Liquid
CO-OP M.C.P. Amine Liquid
CO-OP M.C.P. Sodium Salt
CO-OP Brush Killer
CO-OP T.C.A. Grasskiller
CO-OP Lawn Duster
CO-OP Dandelion Spray
CO-OP I.P.C.
CO-OP C.I.P.C.

SEED TREATMENTS

CO-UP Mercury 5 % Seed Dressing
CO-OP Aldrin 50 % Seed Dressing
CO-OP Hexa Seed Dressing
CO-OP Dual Purpose Seed Dressing
CO-OP Liquid Mercury

RODENTICIDES

CO-OP Ratmaster Concentrate
CO-OP Ratmaster Prepared Bait
CO-OP Ratmaster Water Soluble Rat and Mouse Killer



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WINNIPEG CANADA

